

## CLAIMS

What is claimed is:

1. A method of calibrating an electrohydraulic control system that provides an output response in response to an input current, said method comprising:

identifying a characteristic equation of the electrohydraulic system, said characteristic equation including a plurality of coefficients;

coupling the electrohydraulic system to a test stand;

applying a plurality of currents to the electrohydraulic system;

measuring the output response of the electrohydraulic system for each of the plurality of currents; and

identifying the coefficients in the characteristic equation from the output response measurements.

2. The method according to claim 1 wherein identifying the coefficients in the characteristic equation from the output response measurements includes employing a curve fitting function.

3. The method according to claim 2 wherein identifying the coefficients in the characteristic equation from the output response measurements includes employing a least squares fitting function.

4. The method according to claim 1 further comprising flashing the coefficients in a memory.

5. The method according to claim 1 further comprising hard-coding the characteristic equation into control software.

6. The method according to claim 1 wherein the electrohydraulic system includes a proportional solenoid and a hydraulic valve, wherein applying a plurality of currents to the electrohydraulic system includes applying a plurality of currents to the proportional solenoid.

7. The method according to claim 1 wherein the electrohydraulic system is employed in an automatic transmission.

8. The method according to claim 7 wherein the electrohydraulic system is employed in a pressure regulation system or a flow regulation system used for controlling functions in the automatic transmission.

9. The method according to claim 1 wherein the electrohydraulic system includes an integrated transmission control unit (TCU).

10. The method according to claim 1 wherein the output response is selected from the group consisting of pressure and fluid flow.

11. The method according to claim 1 wherein applying a plurality of currents to the electrohydraulic system includes applying a plurality of different currents.

12. A method of calibrating an electrohydraulic system employed in an automatic transmission, said electrohydraulic system providing an output response in response to an input current, wherein the electrohydraulic system includes a proportional solenoid, a hydraulic valve, and solenoid drive electronics, said method comprising:

identifying a characteristic equation of the electrohydraulic system, said characteristic equation including a plurality of coefficients;

coupling the electrohydraulic system to a test stand;

applying a plurality of currents to the solenoid controlling the valve;

measuring the output response of the electrohydraulic system for each current;

identifying the coefficients of the characteristic equation from the output response measurements, wherein identifying the coefficients in the characteristic equation from the output response measurements includes employing a curve fitting function; and

storing the coefficients in an on-board memory.

13. The method according to claim 12 wherein the electrohydraulic system is employed in a pressure regulation system or a flow regulation system used for controlling functions in the automatic transmission.

14. The method according to claim 12 wherein identifying the coefficients in the characteristic equation from the output response measurements includes employing a least squares fitting function.

15. The method according to claim 12 wherein the output response is selected from the group consisting of pressure and fluid flow.

16. An electrohydraulic system comprising:

- a device for determining a characteristic equation of the electrohydraulic system, said characteristic equation including a plurality of coefficients;
- a device for applying a plurality of currents to a proportional solenoid in the system;
- a device for measuring an output response of the electrohydraulic system for each current; and
- a device for determining the coefficients in the characteristic equation from the output response measurement.

17. The system according to claim 16 wherein the device that determines the coefficients in the characteristic equation from the output response measurement employs a curve fitting function.

18. The system according to claim 16 further comprising a memory for storing the coefficients.

19. The method according to claim 16 wherein the electrohydraulic system is employed in an automatic transmission.

20. The system according to claim 19 wherein the electrohydraulic system is employed in a pressure regulation system or a flow regulation system used for controlling functions in the automatic transmission.

21. The system according to claim 16 wherein the output response is selected from the group consisting of pressure and fluid flow.